

APPENDIX F

Conceptual King County Driver Display Unit Operating Concept (For Information Only)

April 29, 2003

Note:

In the event of a discrepancy between this Appendix and the Contract specifications, the specifications shall govern.

INTRODUCTION

This document describes a concept and approach for implementing the Limited Integration Mode (LIM) of the Driver Display Unit (DDU) on King County vehicles. It is designed to provide guidance in functional and physical requirements but is not to be interpreted as a complete list, nor is it intended to represent the integration requirements of other Agencies. Items described here supplement, but do not replace, the requirements described in section 6.III-6 of the specifications.

The new DDU must have the capabilities to replace the 10-year old King County Mobile Data Terminal (MDT) as the universal display/keypad device. The MDT is the current operator interface for King County's radio/AVL system.

Figure 1: King County MDT



Replacing this device will allow the inclusion of smart card functions without adding another driver display for the operator. The new DDU will:

- Promote operator safety and ease of use
- Have critical and most commonly used functions “on top”
- Provide clear messages and responses to the operator
- Have off-the-shelf parts and on-going support
- Be adaptable to support new features that may be added later

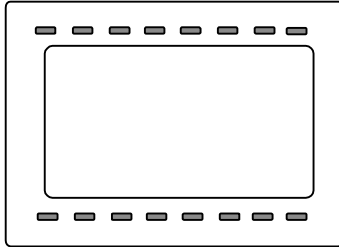
PHYSICAL REQUIREMENTS

DDU's physical requirements will include:

- Soft-Keys
- Programmable labels, with sub-menus for added functions

There is a preference for a horizontal orientation. The technical feasibility of this layout will be determined during detailed design.

Figure 2: Possible DDU layout



FUNCTIONAL REQUIREMENTS

Start-up

At each start-up, the DDU will run self-diagnostic routines. If errors are encountered, appropriate messages will be displayed. If there are no errors, the operator will receive confirmation that systems are OK and the login screen will be automatically displayed. All messages will be in plain English. For example, the following login messages could appear in the display:

POWER ON
DIAGNOSTICS ARE RUNNING

 PLEASE WAIT...

 SYSTEMS ARE OK

The system must be able to perform a start-up under the following conditions:

1. A “cold start” when the bus is switched on and all on-board systems powered up.
2. A “warm start” when the DDU must re-start due to a brief power loss or network communications loss.

Login

A single login will provide operator access to the Regional Fare Coordination System (RFCS) and the radio system. The DDU must support manual logins. An option is also being considered to have an automated log-in using a combination of smart cards and information received via the Wireless Data On/Off Load System (WDOLS).

Regardless of the login method, once an operator logs into the DDU:

1. It will display clean and unambiguous messages regarding whether or not radio system login was successful.
2. It is desirable to replace the flashing Acknowledge (ACK) light on the existing MDT, which has been confusing to some users.

Main Operating Screen (without smart card)

There is a requirement for the DDU to be integrated with the radio system prior to the start-up of RFCS. For example, on-board equipment may be installed but RFCS may not

yet be operational. During this period of time, the radio system must be accessible using the DDU.

The following radio system functionality must be available:

- The DDU must provide system information like the current MDT (including displaying the current time, logged in route and run number, and radio system status [data mode or voice mode]).
- Request To Talk (RTT) functionality must be provided.
- Priority Request To Talk (PRTT) functionality must be provided.
- The PA system will be enabled or disabled by pressing a single key. A label will clearly indicate if the Public Address (PA) system is enabled or disabled.
- A “Settings” key will bring up a sub-menu for less frequent system changes.
- The DDU must have a display area for dynamic messages, such as “Group Call, Please Pick Up Handset”.

Change Settings

Pressing the “Settings” key could bring up a menu that contains options allowing an operator to

- Perform volume adjustments.
- Adjust backlight and contrast settings. (Note that an alternate implementation of backlight adjustment could be a top-level key with intelligence built-in.)
- Manually log into system.
- Perform other functions to be defined in the future.

Volume Settings

The Figure 3 below demonstrates what a volume setting menu might look like.

Figure 3: Sample Menu

SELECT DESIRED FUNCTION AND USE UP/DOWN ARROW TO CHANGE SETTING	
NOTE: 10 IS HIGHEST VOLUME	
	<u>CURRENT SETTING</u>
SET PA:	5
SET HANDSET:	8
SET SPEAKER:	7

From this sub-menu, the operator would be able to select a volume setting and make the necessary adjustments. This method is an improves on current operations by:

- Allowing selection of any mode, any time.
- Providing feedback on current settings.

- Providing visual feedback on the changes made.

Incoming Call

The following incoming call requirements must be met:

- The notification message must change for different call types (single call, group call or all call).
- All three call types also may be received as PA calls.

Outgoing Call

For outgoing calls, a text message should replace the current ACK light function (which operators do not always see or understand).

Main Operating Screen (with smart card)

Once RFCS is operational, the main operating screen could contain the following keys:

- 1/2 ZONE OVERRIDE – used to indicate an exception to the current fareset
- ADULT, REDUCED FARE and YOUTH – used for extra riders whose fare is being paid with one smart card using the “e-purse”
- TRANSACTION REVERSAL – restores a deducted amount to the customer’s card (assuming no intervening transactions have occurred)
- SHORT PAYMENT CLEAR/DUMP

The message display area will provide the operator with fare management messages mirroring the customer display during each transaction.

MINIMUM INTEGRATION

When upgraded to Full Integration Mode (FIM) the system must be expandable to include additional systems and/or functionality. The DDU will be able to accommodate reprogramming to support new functionality, re-labeling of soft keys, adding new sub-menus, and displaying new messages to the operator. Some of the potential future system enhancements envisioned are:

- Automated stop announcements.
- Destination sign control.
- Closed Circuit Television (CCTV) controls.
- Schedule adherence feedback to operator.
- Canned or free form text messages.
- Signal priority.